



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,429	09/21/2005	Matthias Fink	28944/50001	3337
7590 Brent E Matthias Miller Matthias & Hull One North Franklin Suite 2350 Chicago, IL 60606			EXAMINER HUGHES, SCOTT A	
			ART UNIT	PAPER NUMBER
			3663	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/30/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/550,429	FINK ET AL.	
	Examiner	Art Unit	
	Scott A. Hughes	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 September 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the method steps and limitations directed to the signals emitted and received must be shown or the feature(s) canceled from the claim(s). For example, the emission points N and reception points M belonging to the medium are not clearly shown in the drawings. The points i and j are also not clearly shown, as only Tj and Ti are shown. The emission and reception points, N and M, and the points i and j appear to coincide with transducers. However, the language in the specification (e.g. emission points belonging to the medium) requires that the emission points be somewhere in the medium. This is not shown in the drawings. Applicant currently has one figure in the application that does not show all of the limitations of the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

Art Unit: 3663

of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Information Disclosure Statement

The information disclosure statement filed 1/9/2006 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein with respect to the foreign language Aubry reference has not been considered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to

Art Unit: 3663

which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicant claims that the signals are "the sum of n substantially monochromatic elementary signals" in claim 1. Applicant's specification and dependent claims (specifically claim 5) are directed to the signals being acoustic signals. Acoustic signals are not chromatic signals. Light signals are chromatic, but applicant is not claiming or describing light signals in detail in the specification. Since applicant describes and claims acoustic signals, the limitation of the signals being monochromatic is not enabled.

Independent claim 1 contains the limitation of "N emission points belonging to the medium" and "M reception points belonging to the medium." These limitations are not enabled because it is unclear from the specification and the drawings how the emission and reception points can belong to the medium. It appears from the specification and drawings that the emission and reception points are transducers and not the medium. Since transducers are separate from the medium, it is unclear how the points can belong to the medium. The specification does not give enough detailed support to enable emission and reception points belonging to the medium. There appears to be support for the emission and reception points being transducers, but not for them belonging to the medium.

The specification and claims appear to be direct translations from a foreign language. This translation appears to have introduced terms and limitations that are indefinite or unclear.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent claim 1 includes the limitation that the signals are the sum of monochromatic elementary signals. This limitation is indefinite since the specification and dependent claims are directed to acoustic signals and it is unclear how an acoustic signal can be monochromatic.

Independent claim 1 contains the limitation of "N emission points belonging to the medium" and "M reception points belonging to the medium." These limitations are indefinite because it is unclear from the specification and the drawings how the emission and reception points can belong to the medium. It appears from the specification and drawings that the emission and reception points are transducers and not the medium. Since transducers are separate from the medium, it is unclear how the points can belong to the medium.

For the purpose of compact prosecution, the claims will be examined as best understood by the examiner in light of the 35 USC 112 rejections above.

Claim Rejections - 35 USC § 101

Art Unit: 3663

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-13 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims do not require any physical transformation and the invention as claimed does not produce a useful, concrete, and tangible result. The claims do not produce a tangible result because the result of the method steps is a determination of an impulse response. This determination is an abstract idea, and the step of determining could be performed by someone in their head. The steps of the method rely on mathematical operations that are not tangible. There is no real world, tangible result for the method since the impulse response is not used in a real world, tangible way after it has been determined.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 5-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Hossack (5696737).

With regard to claim 1, Hossack discloses a method of determining impulse responses of a medium in relation to the transmission of waves between different points

Art Unit: 3663

(Column 1, Line 55 to Column 2, Line 27; Column 3, Lines 10-60; Column 12, Line 45 to Column 14, Line 56). Hossack discloses: (a) at least one step of emission in the course of which waves are emitted into the medium by generating signals $e_i(t)$ on the basis of a number N of emission points belonging to the medium, where N is an integer at least equal to 2 and i is an index lying between 1 and N which designates one of said N emission points (each transducer in array 16) (Fig. 1), (b) at least one step of reception in the course of which signals $r_j(t)$ are picked up from said waves after transmission in said medium, at a number M of reception points belonging to the medium, where M is a non-zero natural integer and j is an index lying between 1 and M which designates one of said M reception points (transducers in array 16 when used to receive signals) (Column 3), (c) and at least one step of determination of said impulse responses $h_{ij}(t)$ between each emission point i and each reception point j on the basis of the signals emitted $e_i(t)$ and picked up $r_j(t)$ (Column 1, Line 55 to Column 2, Line 27; Column 3, Lines 10-60; Column 12, Line 45 to Column 14, Line 56). Hossack discloses that during the course of step (a), said N emission points are made to simultaneously emit the signals $e_i(t)$, these signals $e_i(t)$ having a duration T and each being a sum of n substantially monochromatic elementary signals, of like amplitude and of respective frequencies $f_{sub.0,i+k \cdot \Delta f}$, where $f_{sub.0,i}$ is a predetermined eigenfrequency (harmonic) at the point i , k is an integer lying between 0 and n , n is an integer at least equal to 2 and Δf is a predetermined frequency interval, the respective eigenfrequencies $f_{sub.0,i}$ at the various points i being distinct and lying in a frequency band of width Δf , and wherein during the course of step (c), each impulse response

Art Unit: 3663

$h_{ij}(t)$ is calculated on the basis of a signal of correlation between the signal $e_i(t)$ emitted at the point i and the signal $r_j(t)$ picked up at the point j (Column 1, Line 55 to Column 2, Line 27; Column 3, Lines 10-60; Columns 4-10 dealing with transmission of frequencies from transducers; Column 12, Line 45 to Column 14, Line 56) (Figs. 7-10, 16-20).

With regard to claim 2, Hossack discloses that the respective eigenfrequencies $f_{sub.0,i}$ at the various points i are separated pairwise by an offset $\Delta f/N$ (Columns 4-6) (Figs. 7-10, 16-20).

With regard to claim 5, Hossack discloses that the waves transmitted in the medium between the emission points and the reception points are acoustic waves (abstract; Columns 1,3,12).

With regard to claim 6, Hossack discloses that in the course of step (a), the medium where the waves are emitted is reverberant (Columns 1-3).

With regard to claim 7, Hossack discloses that the frequency interval Δf is less than or equal to $1/\tau$, where τ is the temporal dispersion of the medium (Columns 4-6) (Figs. 7-10, 16-20).

With regard to claim 8, Hossack discloses that the frequency interval Δf is substantially equal to $1/\tau$, where τ is the temporal dispersion of the medium (Columns 4-6) (Figs. 7-10, 16-20).

With regard to claim 9, Hossack discloses that the duration T is at least equal to $N/\Delta f$ (Columns 4-6) (Figs. 7-10, 16-20).

Art Unit: 3663

With regard to claim 10, Hossack discloses that the duration T is at least equal to $N \cdot \tau$, where τ is the temporal dispersion of the medium (Columns 4-6) (Figs. 7-10, 16-20).

With regard to claim 11, Hossack discloses that the elementary signals exhibit random phases (Column 4, Lines 1-20). Hossack discloses that the phases can have errors, and therefore they are random.

With regard to claim 12, Hossack discloses that the waves are emitted with a certain passband, the frequencies f_{0i} comprise a minimum frequency f_0 and the number n is determined so that the frequency band lying between f_0 and $f_0 + [(n+1) \cdot \Delta f]$ substantially overlaps said passband (Column 1, Line 55 to Column 2, Line 27; Column 3, Lines 10-60; Columns 4-10 dealing with transmission of frequencies from transducers; Column 12, Line 45 to Column 14, Line 56) (Figs. 7-10, 16-20).

With regard to claim 13, the method as claimed in claim 1, in which the reception points are coincident with the emission points (transducers 16) (Fig.1).

Conclusion

The cited prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott A. Hughes whose telephone number is 571-272-6983. The examiner can normally be reached on M-F 9:00am to 5:30pm.

Art Unit: 3663

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


SAH


JACK KEITH
SUPERVISOR, PATENT EXAMINER